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Final April 23, 2009

Libby Asbestos Site
Troy Operable Unit 07
Residential/Commercial Cleanup Criteria
Specific Use Area Visible Vermiculite Action Level
Technical Memorandum

I. Introduction

On December 15, 2003, the United States Environmental Protection Agency (EPA) issued a draft final Action Level and Clearance Criteria Technical Memorandum for the Libby Asbestos Site Residential/Commercial Cleanup (herein referred to as the "CCM"). The CCM provides detailed information regarding action levels that have been and continue to be used for determining which properties or situations require an emergency response cleanup. The action levels identified in the CCM are as follows:

Attics/Walls
- Visual confirmation of open, non-contained, or migrating vermiculite insulation.

Interiors
- Visual confirmation of vermiculite in the indoor living space.
- Concentration of Libby Amphibole (LA) in an indoor dust sample greater than 5,000 LA structures per square centimeter using AHERA counting methods.

Soils
- Visual confirmation of vermiculite or other vermiculite mine related materials in "specific use areas." A specific use area is defined as a garden, former garden, planter, or other defined area of a yard likely to receive significant use and generally not covered with grass.
- Concentration of LA in specific use areas or other yard soils by any analytical method greater than or equal to 1% Libby asbestos.

The CCM includes details to support the establishment of these action levels.

II. Contaminant Exposure Routes for Libby OU4 versus Troy OU7

W.R. Grace maintained numerous vermiculite processing facilities within and near the town of Libby. These processing facilities provided a low-cost or even free source of LA-contaminated vermiculite for local residents. Given the availability of the vermiculite, many local residents in Libby acquired vermiculite materials for their gardens and yards and would transport the vermiculite by truck load to their properties. This availability resulted in the wide-spread distribution and use of LA-contaminated vermiculite observed in Libby today. Troy is located approximately 20 miles to the northwest of Libby. The probability of such widespread use of LA-contaminated vermiculite via the same distribution as observed in Libby (personal trucks) throughout Troy is believed to be low. However, vermiculite attic insulation has been noted throughout Troy Operable Unit (OU) 7. The attic insulation was distributed in bags thus easier to transport to Troy.

III. Troy OU7 Investigations

In 2007, the Montana Department of Environmental Quality (DEQ) began inspections (both interior and exterior) of the residential and commercial areas of OU7. DEQ followed the basic protocol that had been established for OU4 with modifications based on "lessons learned" and updated data collection tools. The objective of the OU7 investigations is to identify those parcels that meet the emergency response cleanup criteria identified in the CCM.

One important fact to note is that not all vermiculite (commercially available or otherwise) contains LA. Thus, visual observation of vermiculite in soil does not necessarily confirm the presence of LA fibers. However, in OU4, through historical sampling and analysis a strong correlation between the visible confirmation of vermiculite in soil and the presence of LA fibers in soil samples has been observed. Given this experience, DEQ did not include the collection of soil samples from specific use areas that contained visible vermiculite initially in OU7. DEQ did semi-quantify the presence of visible vermiculite through a 30-point inspection and categorized the visible observations as none, low, intermediate, or high (CDM-Libby-06).

At the conclusion of the 2007 field season, anecdotal evidence reported to the field teams by property owners suggested that vermiculite observed ih the specific use areas in OU7 did not come from the "local piles" or other sources in Libby. The property owners in OU7 reported the recent purchase of planting materials containing vermiculite from local hardware stores.

Based on this information, the OU7 sampling protocol changed in 2008 to include the collection of a soil sample from specific use areas and a description of the visible vermiculite. The field teams also returned to those parcels inspected in 2007 and collected a soil sample from specific use areas that had visible vermiculite. Thus, several lines of evidence could be considered when reviewing data from the exterior portion of a parcel potentially eligible for cleanup.

IV. Troy Results

In 2008, 392 soil samples were collected from specific use areas with visible vermiculite in OU7. The results of those samples along with pertinent parcel information (e.g., use area description, visible vermiculite counts, vermiculite descriptions, etc.) are provided in the attached spread sheet. Some notable statistics are in the following table.

Visible Vermiculite Description	# of Bin A/B1	# of Bin B2	Total # in Subset (description category)
Expanded Homeowner Purchase	1	0	1
Expanded Unknown Source	114	0	114
Unexpanded/Unexpanded Unknown Source	98	2	100
Unexpanded/Potting soil mix Homeowner purchase	170	1	171
Unknown	1	0	1

The Visible Vermiculite Description is based on the inspection team's discussions with the property owners and their own observations. The "Bin" categories allow for ease of grouping of PLM-VE soil analytical results. Bin A is non-detect, Bin B1 is "trace" or less than 0.2% LA, and Bin B2 is between 0.2 and 1% LA by weight. Bin C are those soils with LA greater than 1% by weight. Please note there are no Bin C results from the specific use areas with visible vermiculite in OU7.

In summary, out of 392 soil samples collected from specific use areas with visible vermiculite, only three have LA fibers detected above 0.2%.

V. Conclusions

The following conclusions can be drawn from the attached spread sheet and other evidence detailed in this memorandum:

- The majority of vermiculite present in soil in OU7 does not contain LA and did not come from the "local piles" in Libby;
- The vast majority of the 392 soil samples were semi-quantitatively categorized with very few "low" visible observations pursuant to the protocols in CDM-Libby-06. Therefore, the samples and use areas represented in the table do not include any "large piles of pure LA;" and
- There were five samples collected described as "expanded leaking from building" and only one of those had a Bin B2 (between 0.2 and 1% LA by weight) result.

VI. Recommendations

DEQ offers the following recommendations based on the above discussion:

- Continue to collect soil samples from all use areas;
- Continue to semi-quantify the presence of visible vermiculite in all use areas; and
- Do not apply the action level of "visual confirmation of vermiculite or other vermiculite mine related materials" in "specific use areas" in OU7 as an independent cleanup criterion. Instead, consider several lines of evidence and criteria for cleanup decisions, including, but not limited to, the presence of visible vermiculite in exterior use areas.